MEDICAL MUSEUM.

VOL. V.....No. I.

On Snake Stones and other Remedies for the Cure of Diseases produced by the Bites of Snakes and mad Dogs. By JAMES MEASE, M. D.

I SHOULD have permitted the miraculous account of the snake stone, as given by William H. Harding in your last volume, p. 240, to have died the silent death which it justly merited, did I not feel concerned lest the character of our country should suffer in the opinion of reasonable men in other parts of the world, if it were permitted to pass unnoticed. An entire silence upon the subject would apparently authorize the belief, that whatever opinion might be entertained respecting the snake stone and its virtues, no fact or argument could be adduced against it; one protest, therefore, at least, shall be offered upon the occasion.

I ought to premise, before proceeding further, that the stone celebrated by Mr. Harding is not the only stone in Virginia, or in the world, supposed to possess the virtues of extracting the poison from venomous animals. In the autumn of 1805, a Mr. Mico[illegible], of Virginia, announced to the public his being

possessed of such a stone, and proposed to the inhabitants of four or five adjacent counties, to sell it for the moderate sum of 2000 dollars, in shares of 10 dollars each. Lately, at Washington city, another stone of a similar nature has been announced in the papers. At or near Bustleton, in Philadelphia county, a man possesses one of these snake stones, which has obtained as much celebrity in the vicinity of the owner as those in Virginia. Mr. Harding himself mentions one being in the possession of Joseph Fredd, of Loudon county, Virginia. Lastly, in India such stones are very common, and the credulous natives believe as firmly in their preservative powers against the effects of the bites of venomous snakes, as the Chinese do in the universally salutary operation of the famous ginseng root. The author of the "*Wonders of Nature and Art*" thus notices these stones, in the account of Tonquin. "Persons who happen to be bitten by serpents press out the blood, and apply a small stone called the *serpent stone*, which is said to possess the miraculous power of drawing out the poison. When impregnated with the venom, it drops off like a leech. It is then carefully washed with milk and water, in which lime has been diluted; and, on a second application to the wound, it exhales all the virus so completely, that, in less than an hour, the patient becomes perfectly free from pain."—Vol. VI, p. 271, Philadelphia edition.

Two of these stones are in the cabinet of the Philosophical Society, and another one is in my possession, all of which were brought last year by a gentleman from India. They are rather more than an inch long, and about five-sixteenths of an inch broad, of a bluish or slaty colour, and flattish shape.

When I first read the proposal of Mr. Micow in the Richmond Inquirer, for the sale of the specific, I was at a remote

corner of the union, viz., St. Simon's Island, Georgia; and as I was well persuaded of the imposition attempted to be practised upon the people, I wrote an address to them without delay, and gave my reasons why I did not believe that the smallest particle of medical virtue resided in the stone; accounting, at the same time, for the supposed preventions of the disease by it; for it must be remarked, that no curative power was allowed to the stone after the disease has actually come on. The piece was sent to Savannah, for insertion in a newspaper, and a copy directed to be forwarded to the editor of the Richmond Inquirer; but it was mislaid by the printer for some months, so that my endeavours to serve the people of the counties called upon to buy the stone were rendered fruitless. Indeed, I might have saved myself the anxiety upon the occasion; for, from what I have since learnt, the people of Naples do not more firmly believe in the miraculous liquefaction of the blood of St. Januarius, than do many of the good people of Virginia, with respect to the infallibility of the snake stone. It will scarcely be credited at a future day, when numerous failures of the now famous remedy shall have taken place, that the proposed number of shares was filled up in a few weeks; and that, after a meeting of the subscribers for the purpose, the stone was deposited in the hands of Dr. Brockenbrough, of Tappahannock, as a central spot, whence it might be most readily obtained, when desired by any of them. Mr. Micow no doubt feels very snug at the receipt of 2000 dollars; and the worthy stockholders are quite secure from even the apprehension of danger from all the attacks of rattle-snakes or mad dogs in their counties!!

My address, when found, was sent to Richmond, to my friend Dr. Trent, who inserted it in the Inquirer. In addition to what I have now to say, I may repeat, with propriety, what I then

stated, and I earnestly beg the serious attention of all concerned to my remarks, viz., that the deception with respect to the supposed efficacy of these stones, and of all other preventive remedies, arises from the following causes: 1, from the snake giving the bite not being venomous: 2, from the dog not being mad: 3, from the wound, whether from snake or dog, being made through clothes or leather: 4, from the known and established fact, that not one in twenty persons who are bitten by dogs *actually mad*, are ever attacked by the disease.

1. All snakes which bite are not venomous: the number of the latter kind in this country are very few compared with the great varieties which are to be found. Even the dreaded rattle-snake often bites without injury following. Hence the first source of fallacy in attributing preventive powers to the stone, or any other external or internal remedy.

2. The dog inflicting the bite may not be mad. These faithful animals are subject to a variety of diseases, inducing a fretfulness or irritability of temper, which may cause them to bite upon a slight provocation. A dog, moreover, may have lost his master, when on a journey; and in passing through a town, while he is heated by exercise, lolls his tongue, froths at the mouth, and pants. The alarm is given, a rabble collects, pursues, and attacks the animal, who, using the only weapons of defence in his power, viz., his teeth, assails his enemies: a bite given by a dog under such circumstances would be supposed highly dangerous, and a remedy applied would obtain the credit of prevention, though not in the least entitled thereto.

I have no hesitation in saying that the dog which bit Mr. Harding's child was *not* mad. The only symptoms of mad-

ness which he discovered was his "*biting at every thing within his reach, both before and after being tied.*" Mr. H., "certain that the dog was mad, directed him to be killed." This act completely puts it out of our power to ascertain whether his opinion was correct or false: for dogs will often bite at every thing, though not mad. When, at an early period, I turned my attention to this subject, I dwelt on the propriety of *confining* instead of killing all dogs from which bites might be received, in order that the certainty of the animal's madness might be ascertained, and much uneasiness to the sufferer thereby probably prevented. This advice cannot be too often repeated. In the present case, the fact can never be known.—From these remarks we may learn the fallacy in attributing preventive powers to the snake stone, or to any other external or internal remedy. From Mr. Harding's account, however, of the snake stone, to which he attributes the preservation of his child, it appears, that the owner had cured the disease in some "who had the paroxysms of hydrophobia on them at the time of the application." I will not insinuate that there was any disposition to exaggerate the powers of the stone, but I will say, that the owner was mistaken as to the disease. Our books of medicine are full of imaginary cures of the complaint, by various and opposite remedies, the latest of which is that related by Dr. Burton in the Medical Repository*, hexade 2, vol. 2. If, then, medical men may be so easily led into an error, is it any wonder that others who have no knowledge of the general symptoms will readily fall into an error on the subject? But can any medical man reconcile himself to the theory, that a little stone, by being merely applied to the bitten part, can have the power to draw all the venom from the general system to one spot, and then draw it out?

* See my remarks upon this case in the Medical Museum, vol. 3.

3. The part of the body bitten materially affects the chance of infection, and, of course, the credit of the remedy. Much fallacy has arisen from inattention to this circumstance. A person may be bitten on the hand or face, and do nothing for the wound: he is seized with the disease, and of course dies; for, alas! *no cure has ever yet been effected:* another is bitten, perhaps by the same dog, through a coat, stocking, boot, or shoe, by which the dog's poisonous saliva, or snake's venom, is wiped off, and the clean tooth enters the flesh. The snake stone or other remedy is applied, and no complaint follows: in such case, the efficacy of the nostrum would be apparently certain, whereas the error of ascribing preservation thereto must be obvious.

4. Numerous writers of the most established credit have recorded, that not one of a great many persons bitten by dogs actually mad, ever take the disease which sometimes arises from a bite. The "celebrated" Cocchi*, as Van Swieten calls him, relates, that, among several persons bitten at the same time, some died, notwithstanding the most noted methods of cure had been used; and that others again remained perfectly well, although they underwent no manner of treatment. Dr. Vaughan† informs us, that "of between twenty and thirty persons, who were bitten by the dog which gave the fatal wound to the boy," whose case he relates, "not one felt the least ill effects except himself." "I know," says Mr. John Hunter, "where there were twenty-one people bitten by one dog; nothing was done for any of them, and only one was taken ill: if they had taken medicine, then it would have been

* Bagni di Pisa, p. 318. Van Swieten's Comment. Aphor. 1137.

† Cases and Observations on Hydrophobia.

said, that they only lost one out of twenty-one*. Dr. Houlston† says, that, out of nine persons bitten by one dog, only one was taken ill.

5. Lastly, some persons have a fortunate inaptitude to take the disease. "I once knew a footman," says Dr. James‡, "who was three times bitten by dogs manifestly mad, insomuch that several animals bitten by the same dogs, near the same hour, contracted the distemper, and died. This fellow could not be persuaded to do the least thing by way of precaution, and yet never had the least tendency to hydrophobia."

Some of the above facts were formerly published by me||, upon the disease in question; but as the pamphlets which contain them are not now to be purchased, and it is of great consequence to undeceive the public with respect to an error of so much importance as trusting to an inert remedy to prevent an awful disease, I thought it better to state them at length than barely to refer to books, which cannot be supposed to be within the reach of those for whom this paper is principally intended. I think they ought to satisfy every one of the absurdity in attaching the least credit to the snake stone, or to any other preventive internal remedy or external application. The only rational means of prevention, and which should never be neglected, are, enlarging the wound, if necessary, pouring water, either warm or cold, upon the wound from the mouth of a tea-

* Letter to Dr. Hamilton. Remarks on Hydrophobia, p. 213. London: 1798.

† London Medical Journal, vol. vi.

‡ Treatise on Canine Madness, p. 40. London: 1760.

|| Inaugural Dissertation. Philadelphia: 1792. Observations on the Arguments of Professor Rush, in favour of the inflammatory nature of the disease produced by the bite of a mad dog. Philadelphia: 1801.

kettle, and keeping the part open for several months. The inutility of all internal remedies will be obvious when it is known, that the disease has been known to attack in all the intermediate periods between a few days and four years*.

The world has long been gulled by numerous specifics for the prevention of the dreadful disease arising from the bite of a mad dog; but they have all, in the end, lost credit, owing to their repeatedly failing, and to the publication of such cases in the medical journals. In this country, I know of only four specifics which have acquired credit for the same purpose, viz., one by Kettering, of Dauphin county, in this state; the snake stone of Virginia; Machant's pills; and the remedy of Mr. Crous, of New York. Mr. Kettering had been famous for upwards of thirty years, for the cure of the disease, and was consulted by all ranks in several of the states†. In consequence of the secret having been stolen from him, he determined to make it public, and applied to the legislature of this state, in their session of 1800—1, and stated that he originally brought the remedy from Germany, but found it afterwards in this country; as usual, he added that he had never failed in a single instance for upwards of thirty years, and offered, at the same time, to disclose the remedy to the public, trusting to the liberality of the legislature for suitable remuneration. A committee was appointed to confer with him; the plant was shown, and, upon consulting that excellent botanist, Dr. Muhlenberg, of Lancaster, it was found to be a common plant of our country, viz., the *anagallis arvensis*, or common pimpernel, or chick-

* Medical Repository.

† A gentleman informed me, that, several years since, he met a negro man, servant to general Washington, at Hagerstown, in Maryland, who had been to Kettering on account of a bite from a supposed mad dog.

weed. As the proof of its preservative powers rested upon the mere authority of the applicant, the committee did not think proper to recommend any reward for him, but contented themselves with making honourable mention of his patriotic conduct.

Of all the famed specifics which have at various times been offered to the world, none have received so much attention and such distinguished honours as the *anagallis*. Professor Murray, in his *Apparatus Medicaminum*, has given a long account of it, and of the various authorities upon which its character was supported. From that writer it appears, such was the opinion of its efficacy, that laws were even passed by several governments in Europe to preserve the plant from destruction. Murray, however, doubts its virtues, and enumerates several instances recorded of its failure. Its inefficacy was also shown in the case of the child of a citizen of Philadelphia, and in that of a Mr. Huber, of Lancaster, the next summer after the discovery of the plant to the legislature. Dr. Muhlenberg also informed me of another instance in which it failed.

2. The snake stone is already disposed of; I shall therefore proceed to state,

3. That a composition, known by the name of *Machant's pills*, has also acquired some celebrity as an infallible preservative in Virginia; but their total inefficacy has lately been humanely shown by a statement of Mr. Marshall, of Winchester, in a melancholy case in which they had a fair trial. No doubt many more have occurred, but they have either been designedly concealed, or no public mention has been made of the event by those under whose cognizance they happened. But,

4. Here comes the climax! It would seem that Mr. Crous, of New York, has been long famous for the prevention and cure of the disease under consideration, and that the legislature of the state purchased the secret from him, whether upon his petition or their request, I know not: the following is the statement upon the subject, taken from the public prints, and I think will astonish the world:

"NEW YORK, April 2, 1806.

"We have been informed that a mad dog was killed in the precincts of this city yesterday, after having bitten two or three persons and several cows.

"As the season is coming on when that dreadful disease, the hydrophobia, more commonly prevails among the canine race, we hasten to lay before our readers the following account of a remedy, which has every appearance of being effectual:"

"*STATE OF NEW YORK.*

"*Comptroller's Office.*

"Pursuant to the direction of an act entitled 'An act for granting a compensation to John M. Crous for discovering and publishing a cure for the canine madness,' passed the second of February, 1806, I do hereby certify, that the said John M. Crous hath this day deposited in this office a certain writing, purporting to be the remedy used by him with certain success, for more than twenty years past, for the cure of the hydrophobia, or canine madness, which writing is in the words and figures following, to wit:

'CURE FOR THE BITE OF A MAD DOG.

'The following is an account and prescription of a cure for the hydrophobia, or canine madness, made by John M. Crous,

in conformity to an act of the legislature of this state of New York, passed in their present session, viz.

'1st, Take one ounce of the jaw-bone of a dog, burned and pulverized, or pounded to fine dust.

'2dly, Take the false tongue of a newly foaled colt; let that be also dried and pulverized; and,

'3dly, Take one scruple of the verdigrease which is raised on the surface of old copper by lying in moist earth: the coppers of George I. or II. are the purest and best. Mix these ingredients together, and if the patient be an adult, or full grown, take the common tea-spoon-full a-day, and so in proportion for a child according to its age, one-half of the copper of the above kind, if to be had; if not, then a small increased quantity of any baser metal of the same kind: this to be taken in a small quantity of water.

'The next morning, fasting (or before eating), repeat the same as before. This, if complied with after the biting of the dog, or before symptoms of madness, will effectually prevent any appearance of the disorder; but if after the symptoms appear, a physician must immediately be applied to, to administer the following, viz.

'*Three* drams (or 180 grains) of verdigrease of the kind before mentioned, mixed with half an ounce of calomel, to be taken at one dose. This quantity the physician need not fear to administer, as the re-action of the venom then diffused through the whole system of the patient, neutralizes considerably the powerful quality of the medicine.

'Secondly, if in three hours thereafter the patient is not completely relieved, administer four grains of pure opium, or one.

'N. B. The patient must be careful to avoid the use of milk for several days after taking any of the aforegoing medicine.

'JOHN M. CROUS.

'*Albany. ss.* John M. Crous being duly sworn, deposeth, that the above account and prescription for the remedy and cure for the hydrophobia, or canine madness, is a just and true account and prescription, and the only one used and practised upon by himself more than twenty years past, and which has not failed of perfect success in any instance of the vast number of unfortunate human beings who have been bitten by mad dogs, and who have applied to him, the deponent, for relief.

'JOHN M. CROUS.

'*Sworn the 24th day of March*, 1806, *before me, James Kent, chief justice, &c.*

'Mem.—The word *three* in the last line of the first page written before an erasure, and then sworn to.

'J. KENT.'

"Given under my hand, at Albany, the 25th day of March, 1806.

"ELISHA JENKINS, *Comptroller.*"

Upon the above extraordinary act, I will make only this remark. The good people of Virginia certainly had a right to buy the snake stone of Mr. Micow with their own money, but for a legislative body to throw away the public treasure in the

purchase of a secret, without first knowing whether the prescription was even reconcileable to the principles of common sense, and which, when revealed, must strike every man as the most abominable absurdity, is a conduct highly unjustifiable, and must subject them to the ridicule of all the civilized world.

The successful event of a case of tetanus in consequence of a strangury being brought on by the use of tincture of cantharides, given by Dr. Samuel Brown, of Lexington, Kentucky*, and the striking analogy subsisting between that and the disease produced by the action of the canine virus on the human system, induced me to recommend it in the latter complaint†. This advice I afterwards enforced‡ by new arguments derived from the relation of cures by Mr. Andry‖ of that disease, by large doses of cantharides. Since that period I have been informed by several medical friends, that the tincture had either failed in the tetanus, or that a strangury could not be effected**. Large doses should therefore be given, when it is employed, and at an early period of those diseases, as the difficulty of making an impression with all medicines, upon the system while labouring

* See Medical Repository, vol. iv.

† Observations, &c.

‡ Printed sheet—June, 1802.

‖ Memoir. Acad. Roy. Med. Paris, vol. i.

** Dr. Coxe gave 30 drops every hour to a boy, on the third day of tetanus; after the fourth dose, "violent pains of the stomach and strangury rendered its exhibition improper. The symptoms abated from the time this effect took place, but the symptoms of strangury no sooner subsided the next day, than the tetanic symptoms recurred. The strangury returned slightly next day, but it could not afterwards be produced to the proper degree to do good, although large doses of the tincture were given. The wine and opium which were also taken probably prevented its recurrence." See Medical Museum, vol. i.

under either complaint is well known. Its operation too should not be interrupted by the use of other medicines.

Another remedy, when its administration is practicable, might be tried. I mean *hydro-carbonate.* It is well known that the irritability of the system in both diseases, but particularly in that produced by the canine virus, is excessive, and that this constitutes one of the greatest obstacles to the administration of medicines. The warm bath, opium, all the remedies which so effectually remove this symptom in other diseases, have not the smallest effect in this, however large the dose. Those who have seen the disease will agree with me that it has no parallel in the list of human maladies; and as the antispasmodic virtues of the hydro-carbonate gas have been fully ascertained, and *we are yet on the look out for a remedy*, there can be no objection to a trial of it, as proposed some years since by Mr. Bar*. Pneumatic medicine has not found any advocates in this city; the success of the European practitioners, however, especially Dr. Thornton, ought to induce a trial of airs which have been found salutary, particularly in those diseases in which physicians so seldom give relief by other remedies†.

* Beddoes' Communications.

† Thus Dr. Thornton has lately announced his success in the cure of two cases of asthma, by causing the patients to inhale oxygen gas. He had before recorded a case of the same disease, which appeared to be a gouty affection, cured by the same remedy. See Tilloch, vol. vi.

" A deterioration of atmospheric air, by a mixture of hydro-carbonate, has been found advantageous in epilepsy, and other convulsive diseases in young and plethoric habits, especially where the fits recurred in sleep. By moderating this irritation, the fits ceased; the pulse was reduced in frequency, and natural repose took place. Where sleep has been broken, and a habit of nocturnal watchfulness induced, it has been proposed, as a counteracting remedy, and under the sanction of experience. A reduced atmosphere, by a number of

Should the irritability be found to abate after the inhalation of *hydro-carbonate*, the difficulty of swallowing might probably be overcome, and allow of the exhibition of wine and other stimulants to cure the disease. But in the country, the use of this remedy is not to be expected, and, even in this city, a patient might die before an apparatus could be got ready for a trial of it. Other applications, therefore, calculated to produce similar effects, must be sought for; and among these, frictions of the body with warm oil, and the use of the powder of *stramonium* leaves, or extract, in doses of two grains, as I formerly recommended*, appear to promise most. The *volatile alkali* is also entitled to attention in this disease. We have the most respectable testimony of the successful exhibition of this remedy in cases of bites of serpents in the East Indies, and there are some facts related of its having cured the disease now under consideration, when applied to the wound, and by internal exhibitions†.

candles burning in a bed-chamber on the rejoicing night for lord Howe's victory, procured a physician in this situation a night of repose unexampled for several years, and to his servant, in the same chamber, profound sleep. Other cases corroborated its hypnotic virtues, and might give birth to the proposal of administering it in hydrophobia, where high irritation and consequent watchfulness harass the patient." Hamilton on Hydrophobia, vol. ii, p. 74.

* Inaugural Dissertation: 1792. Observations, &c.: 1801.

† See Journal de Physique: year 8. The form was common volatile spirits, 12 or 15 drops in a glass of water for a dose.

A Brief View of the Morbid Appearances observed after Death in Yellow Fever in different parts of the World. *By* EDWARD LOWBER, M. D., *of Philadelphia.*

DR. MITCHELL, of Virginia, is among the first who examined the bodies of those dead of the yellow fever. He made his dissections in the years 1741 and 2, of which, in a letter to governor Colden, he gives the following account: The liver, he says, was generally found turgid and plump, and its concave surface of a deep black colour; round the gall-bladder seeming to be mortified or corrupted. The gall-bladder contained a black ropy atrabilis, which resembled bruised or mortified blood, evacuated from the mortified parts of the liver surrounding. It would, however, stain a knife or probe thrust into it, which is a proof of its origin. The stomach had its villous, and, in one instance, its peritoneal coat inflamed. It contained nothing but a small quantity of drink, taken just before death, and some of the black choler, resembling that in the gall-bladder, floating upon it, which was of a blacker colour here than in the gall-bladder itself.

Upon inspecting the viscera in this same disease, Dr. Lining, of Charleston, found, on the inside of the stomach, several carbuncles, or gangrenous spots; and says, that in all he examined he not only observed the same appearance, but found the blood very fluid, and the vessels of the viscera much distended: from whence, he says, he was very inclinable to think, when the disease was not conquered in its first stadium, that about the termination of the fever there was a metastasis of the morbid matter to the viscera.

Dr. Hillary, in his observations on the putrid bilious fever, commonly called the yellow fever of the West India islands, says, "upon opening the bodies of those who die of this disease, we generally find the gall-bladder, and biliary ducts, turgid and filled with a putrid blackish bile, and the liver and stomach, and the adjoining parts, full of livid, blackish, mortified spots, and sometimes gangrenous in those, as also several other parts of the body."

In several bodies examined by Dr. Jackson, the morbid appearances varied in different cases. When the irritation had been great, and the re-action of the vascular system violent, in the early stage of the disease, the liver, brain, and very frequently the inner surface of the stomach, exhibited marks of derangement. In what is called the first form of the yellow fever, the vessels of the brain were frequently found distended with blood, and, in some particular instances, its membranes were inflamed. The inner surface of the stomach often exhibited large spots or circles of a bright red, resembling actual inflammation, in the centre of which were frequently seen small points, like beginning gangrene. The villous was sometimes in the act of separating, and, in some places, actually separated, from the nervous coat of the stomach. The appearances of the liver were various. In some instances its vessels were greatly distended, and the biliary ducts preternaturally enlarged. In other instances it was uncommonly large, black, and distended, as if suffocated with blood, and its membranes were ruptured. The urinary bladder was often small and contracted, and on its internal surface were bloody spots. It seldom contained urine.

In the Medical Repository of New York, vol. ii, p. 249, we have an interesting account of three dissections made by Drs.

Warren and Rand, during the epidemic which prevailed at Boston, in 1798. In their first examination they found the stomach with every mark of inflammation; but in the second and third, it was nearly natural. In every instance the liver was greatly inflamed. The lungs were *immensely* diseased. In one case, eight or ten ounces of firmly coagulated blood were found in the cavity of the thorax. The brain of the second subject they examined, was astonishingly distended with blood, and one or two ounces of serum were effused between the dura and pia mater.

Dr. Chisholm, in the first volume of the second edition of his work on the malignant pestilential fever, p. 183, has published an account of several dissections made by himself and others. In every case which came under his own inspection, the liver was much diseased. In the first case, which, he says, resembled all the others, the liver had shrunk to less than one half its natural size, was uncommonly flaccid, and of a colour nearly approaching a buff. The gall-bladder was flaccid and greyish, and contained a small quantity of very dark-coloured ropy bile. The intestines were inflated, inflamed, and sphacelated, particularly the duodenum a little beyond the pylorus. The lungs were highly inflamed, and of a lively texture and hue. The bladder contained near three quarts of urine, and was dilated above the pubis. Its coats were much thickened. From this account of Dr. Chisholm, the stomach appears to have been diseased in no one instance.

The following dissections were made at the City Hospital, during the prevalence of the yellow fever at Philadelphia, in 1805:

DISSECTION I.

A child of six years of age was the subject of the first examination. In addition to the usual symptoms of yellow fever, this case was attended with constant stupor. Upon opening the body, the following appearances were observed:

The stomach was inflamed in one or two spots, and contained a considerable quantity of black, but not very fluid matter. The discharge in this instance, I suspect, reduced the inflammation, which before death, in all probability, was very considerable. The liver and all its appendages were natural. The bile and black vomit were compared, but found to have not the least resemblance. The vessels of the brain were not in the least turgid, and the ventricles natural. An intussusceptio occurred in two portions of the small intestines, which, like the stomach, were inflamed.

DISSECTION II.

Upon opening the abdomen of a young man, the stomach was found contracted, and its internal coat of a reddish-brown colour. It contained black vomit, the odour of which was not a little offensive. In cutting through the œsophagus, in order to remove the stomach, a worm was divided. This appearance of worms was not at all uncommon. The internal coat of the stomach was remarkably corrugated. Notwithstanding, the patient never once complained of any thing like spasm, nor, during his indisposition, did he once attempt to vomit.

DISSECTION III.

In the third dissection the stomach was found much inflamed and distended. In some parts of it the villous coat had the appearance of ulceration. The intestines, as well as the sto-

mach, contained much black matter. The unusually black colour of the intestines, I suspect, proceeded from the large quantity of black secretion they contained. The liver was natural, except in colour, which was yellow.

DISSECTION IV.

Fourteen days previous to his death, J. H. was attacked with the usual symptoms of the malignant yellow fever. In its first stage the disease was highly inflammatory, and was, therefore, treated with depleting remedies, of which blood-letting was much inferior to purging. Upon inspection, the stomach was found without inflammation, but having its coats, in some degree, thickened. The intestines were loaded with worms and black secretion. The liver was of its natural size, but had a yellow colour. Although this patient never complained of any affection about the region of the pubis, the bladder was found considerably diseased.

DISSECTION V.

The symptoms in this case were nothing uncommon. Upon opening the thorax we found its contents natural, the pericardium excepted, which contained a small quantity of yellow serum. The contents of the abdomen were in a very different state. The stomach, towards the cardia, was much inflamed, and contained a considerable quantity of black flocculent matter. On one portion of the internal coat of the stomach there was a circumscribed spot evidently gangrenous. The jejunum and ilium were inflamed, and contained a black secretion. The liver and gall-bladder, as well as the bile, were natural. The urinary bladder was considerably distended. The scrotum was observed to have advanced much more rapidly towards putrefaction than any of the surrounding parts.

DISSECTION VI.

In this case, although the morbid appearances indicated great disease, the symptoms, during the indisposition of the patient, were by no means violent. The patient was a man aged about thirty, and died a short time after his admission into the hospital. Upon opening the abdomen, the stomach was found of the natural size, but extensively inflamed, and in one spot gangrenous, and containing a large quantity of black flocculent matter. These flocculi had much the appearance of coagulated blood, differing in some degree, perhaps in consequence of having remained for some time in the stomach. The small intestines were very considerably inflamed, and the jejunum and ilium contained a large quantity of black matter. The colon was more natural, though not entirely free from disease. The liver was considerably enlarged, indurated, and yellow. The gall-bladder was larger than natural. The pancreas was also indurated. The coats of the urinary bladder were thickened, and the abdomen contained a quantity of yellow serum. As this man had been extremely intemperate in the use of spirituous liquors, there is no doubt but that the morbid appearances of the liver and pancreas ought to be referred to that practice.

DISSECTION VII.

J. C. was admitted into the city hospital with the usual symptoms of the yellow fever, which on the fifth day terminated his existence. During his indisposition he complained of suppression of urine, and was affected with considerable stupor. The brain was examined, but, contrary to expectation, was found not in the least diseased. The stomach was slightly inflamed, and contained none of the black vomit. The small intestines were inflamed, and contained bloody mucus. The liver was natural in its size and texture, but of a slightly yellow

colour. The urinary bladder was of its natural size, but considerably inflamed, and in some parts of it gangrenous.

DISSECTIONS VIII AND IX.

The appearances after death, in these two cases, were very similar. In one the brain was examined, but found to deviate in no respect from a natural state. The stomach of both was inflamed, and contained black matter. The intestines of one were natural, of the other inflamed. The liver, its yellow colour excepted, was natural. The gall-bladder was small, and its bile very different in appearance from the black vomit in the stomach. In one of the cases the urinary bladder was contracted to so small a size that its cavity was nearly obliterated.

DISSECTIONS X AND XI.

The appearances after death in these two dissections were very similar, but the symptoms were as dissimilar. In one of them, during the whole indisposition, it was impossible to induce him to take drink, nourishment, or medicine; and if an attempt were made to force them upon him, the nurse was in danger of being bitten. The symptoms were evidently hydrophobic, and, had circumstances permitted, the trachea would have been examined. Upon opening the bodies I found the stomachs considerably inflamed, and containing black vomit. The intestines were nearly natural. In one of the cases the liver was natural; in the other its concave surface was of a blue colour. The brain examined was natural.

DISSECTIONS XII, XIII, AND XIV.

In these three cases the stomach was almost the only organ affected. The inflammation in one case was violent, but in

the other two it was inconsiderable. The intestines, except in one case, when the inflammation had been pretty violent, were nearly natnral. In two of the cases the liver was natural; in the other its concave surface was nearly the colour of the spleen. The gall-bladder was much contracted, as also the urinary bladder, which in one case contained a small quantity of yellow fluid.

DISSECTION XV.

This case terminated in death on the fourth day. Upon examination I found the stomach slightly inflamed, and containing a large quantity of black flocculent matter. The intestines and their contents were natural. The liver was natural, and the gall-bladder considerably distended. The blood in the ventricles of the heart was very fluid.

DISSECTION XVI.

M. L. the subject of the 16th dissection, in a short time after being attacked with symptoms of the malignant fever, was admitted into the city hospital. During his illness in the hospital he voided no urine, but perspired most profusely. This was particularly the case after coming out of the warm bath. His eyes were inflamed, and his countenance indicated a most malignant disease. The viscera, upon examination, exhibited the following appearances: the stomach was highly inflamed, and its internal coat remarkably corrugated. The inflammation was not, as is most usual, in spots; but it occupied the whole of the internal coat of the stomach. Its contents were natural. The liver, gall-bladder, and its contents, were all natural. The kidneys were also natural. The bladder was contracted to a very small size, and contained not more than a dram of urine.

DISSECTION XVII.

C. M. was admitted into the hospital with symptoms of the yellow fever assuming the type of an intermittent. The intermittent was so well marked, and the accession of the chilly fit succeeded by fever, so regular, that the bark was prescribed without hesitation. For a time the remedy appeared to have done every thing desired. At length, however, the disease assumed its most common garb, and suddenly terminated in black vomit and death. Upon opening the thorax I found the left lung adhering to the pleura in every direction. The right lung was natural. The pericardium contained a portion of yellow serum. The stomach was very considerably distended, and contained, upon admeasurement, thirty-two ounces of black vomit. Near the pylorus was a gangrenous spot the size of a half-dollar piece. The intestines contained a large quantity of black matter. The liver was natural. Its gall-bladder was much contracted, and contained a small quantity of viscid bile. The urinary bladder was also very much contracted.

DISSECTION XVIII.

The subject of this dissection was a sailor, admitted into the hospital without pulse. The contents of the thorax were natural. The stomach was slightly inflamed, and contained a chocolate-coloured matter. The intestines and their peritoneal coat (in a small degree) were inflamed. The superior surface of the liver was natural, its inferior of a bluish colour. The kidneys were natural. The urinary bladder was contracted to a very small size.

DISSECTIONS XIX, XX, AND XXI.

The appearances observed in these three cases were very similar to those already mentioned. The stomach and intestines

were diseased, as in the other cases, while the liver was natural. The urinary bladder was much contracted.

OF THE BLACK VOMIT.

Having so frequently mentioned the morbid appearance of black vomit in the preceding dissections, I shall now give a short description of it.

The black vomit, when ejected from the stomach in small quantities, is not black, but consists of a dark brown flaky substance, resembling the grounds of spoiled porter, suspended in a fluid, lightly viscid, becoming nearly transparent when at rest, by the subsiding of the brown particles: when the vomit is discharged in large quantities, it is of a black colour, resembling the grounds of strong coffee, slightly fetid. After standing a few hours, a deposition takes place of a black flaky substance, from a fluid, similar in colour to an infusion of green tea, moderately viscid, having a very faint sweetish animal odour, and rather a saccharine taste. The flaky particles which precipitate are various in size, and of a very irregular figure, not unfrequently mixed with pieces of the villous coat of the stomach, which may be distinguished by their being longer in subsiding to the bottom of the vessel than the true flaky substance. There is some disproportion between the flaky substance and the yellow-coloured fluid: the former is generally greater in quantity, and, when separated, is readily incorporated by the least agitation of the vessel, and, when kept in a phial well corked for eight or ten days, assumes rather an agreeable odour, and is extremely brisk, like fermenting beer*.

* See Dr. Cathrall's Account of the Black Vomit.

Having given this short account of the nature of the black vomit, it now remains to ascertain by what viscus it is produced. When the yellow fever first made its appearance, physicians almost uniformly believed the black vomit a vitiated secretion of bile. This opinion appears to have prevailed with many till the year 1800, when Dr. Physick published a paper in the Medical Repository of New York, in which he satisfactorily proved the black vomit to be a discharge from the stomach, and not, as had been supposed, a secretion from the liver. About this time Dr. Saunderson advanced the same opinion. The correctness of the opinion of these two gentlemen will appear from the following arguments:

1. If the darkest-coloured bile be spread thinly over a white surface, such as the skin, it loses the black colour (in which respect, when accumulated in some quantity, it resembles the black vomit) it had in its accumulated state, and appears of a yellowish-green colour. If the black vomit be treated in the same way, it retains its black or dark brown appearance.

2. The bile in the gall-bladder has its common bitter taste; but the black vomit is in general nearly insipid. This fact has been ascertained by many persons, and, among others, by the late Dr. S. Cooper. Patients, in the act of vomiting, have often ascertained it.

3. The black vomit differs materially from any fluid that can be produced, by a mixture of bile with the fluids of the stomach or intestines.

4. I have seen more than thirty ounces of black vomit in the stomach of a subject, whose gall-bladder was small and contracted, and contained a very inconsiderable portion of viscid

bile. This certainly could not have been the case had the black vomit been discharged from the biliary ducts. In other instances, the gall-bladder has contained a transparent and colourless, and sometimes a purulent coloured fluid, while the stomach contained black vomit of the nature above described.

Singular Case of the Discharge of Worms from the Abdomen and Vagina. *By Dr.* JACOB OUTWATER.

Orange Town, February, 1808.

DEAR SIR,

IN a late number of your Museum I met with Dr. Wendell's reply to Dr. Gough, published in a former number. If you consider the following case of sufficient importance to decide the controversy between those two gentlemen, you are at liberty to give it a place in your Museum.

In the month of February, 1803, I was requested to visit a daughter of Mr. James Sarvan, aged ten years. She had been unwell about four months before I saw her. Her mother gave me the following history of her case: from the beginning she complained of pain at the pit of her stomach (scrobiculus cordis) with very little intermission. Sometimes the pain extended down to the navel. In this last situation she was in extreme agony for about an hour, when the pain would gradually go off again, but never so as to leave her entirely free. Those severe attacks would return sometimes twice in one day, and never at a longer interval than two days during the whole period of the illness. She also informed me that she had slight attacks of fever every day, which went off in the course of the night with

profuse sweating. Her bowels had been very irregular; her appetite was totally lost, at other times quite voracious.

About three weeks previous to my visit, her abdomen began to swell, and she also complained of pain and intolerable itching within the cavity of the vagina. On examination, her mother discovered that the external labia were much swollen, and, when handled, were quite painful, which was somewhat relieved by placing her over the steam of warm water.

I shall now describe the situation I found her in. She was very much emaciated; her pulse small and frequent; her teeth, tongue, and fauces were covered with a black crust; breathing short and laborious; her eyes deep sunk in their sockets; cold extremities; diarrhœa; urine, pale and in small quantity; irregular delirium; cold, partial sweats; sharp, shooting pains through different parts of the abdomen; œdematous swelling of the feet and ancles.

The swelling of her belly, which had increased every day from the beginning, had now acquired an enormous size. On examination, it presented the same sensation to my fingers as I have before observed in tympanites, though I could not persuade myself that this was a case of this kind. I examined carefully every part of the abdomen, and found, about two inches below the sternum, evident signs of fluctuation. Whether the contents were pus or water, I could not determine; but the propriety of an operation was sufficiently obvious: her extremely emaciated and feeble condition led me almost to despair of a favourable issue; but the certainty of a speedy dissolution in case nothing was done (however hazardous the attempt), I could not hesitate a moment in the choice. I told

her parents the danger of her situation, and the necessity of performing an operation, and they very readily acquiesced.

After passing a bandage round the abdomen, I made an incision about half an inch long, quite through the parietes of the abdomen, at the part where I discovered a fluctuation, and let out about two quarts of thin fetid matter. The smell was intolerable, notwithstanding the doors and windows were open. I found my bandage quite useful while the matter was discharging; without it, I am persuaded, my patient would have sunk before I obtained that quantity, as she discovered signs of syncope almost immediately after the incision was made, notwithstanding the bandage was well managed by my assistant. I did not dare to draw off all the matter at once, but introduced a piece of lint in the wound, and gave her an anodyne. I directed her mother to take out the lint after the expiration of two or three hours, and suffer the matter to discharge for a few minutes, and to repeat this practice every three or four hours for the first day; and the following, to place the lint over the wound, and to tighten the bandage whenever she found it loose. She was also directed to bathe her abdomen frequently with warm brandy, to repeat the anodyne if the pain should return; and left her bark and serpentaria, to be taken in the form of decoction.

She felt much relieved after the operation, and got two or three hours' sleep. The following day she complained much of the disagreeable smell from the wound; said it made her sick; and her mother was obliged to keep the bed-clothes close around her neck, and cloths wet with vinegar to her nose. It was several weeks before the matter which discharged from the wound assumed a better appearance, and became less fetid.

About a fortnight after the operation, she complained of pain near the incision. Her mother removed the dressings, and a living worm (teretes) had perforated the skin, and had made its way out about five inches. She took hold of it gently, and drew it out. It measured nine inches. A few hours after she complained again, when the dressings were removed, and another taken away, which measured six inches. The first came through about an inch from the incision, the second within half an inch. After this she felt no uneasiness at that part. The colour and consistence of the matter would vary considerably in the course of a week: sometimes the appearance of good pus without fœtor, and, on the same day, would change to the colour and consistence of honey, attended with a very offensive smell. Eight weeks after the operation, the matter suddenly left the wound, and found its way through the vagina, and, in the course of a few hours, she complained of pain and itching in that part, which was soon relieved, by her mother taking three very large living worms (of the same species as those that came out near the wound) from the vagina. The matter continued to flow from this passage till the tenth week from the time I made the incision, and then stopt. Her wounds being all closed, she recruited fast every day, and has ever since enjoyed good health.

I hope the relation of this case will have a tendency to do away the idea, entertained by many physicians, of the impossibility of a patient surviving, in case worms should pierce and pass through the intestines into the cavity of the abdomen; and we certainly cannot hesitate hereafter to believe, that worms may with as much facility get into the cavity of the

bladder, and pass out through the urethra, without proving fatal, as through the parts mentioned in the case of my patient.

With respect, I am, dear Sir,

Your humble servant,

JACOB OUTWATER.

Dr. John Redman Coxe.

Account of the Influenza as it appeared at Princeton, N. J.
By Dr. VANCLEVE.

THE winter of 1806–7 set in very cold, and continued so until the beginning of February. After this, until late in the spring, the weather was very changeable. In the latter part of the month of March, and first of April, there were several great falls of snow, much more than had fallen throughout the whole of the winter. The summer had been uncommonly wet, but the weather, in general, was mild and pleasant. This village has been remarkably free from epidemics of all kinds for several years; even the dysentery and scarlatina anginosa, which are almost the only diseases that have become epidemic here, and to which this place seems particularly subject, had not visited us for a much longer time than usual. About the 10th of August the influenza made its appearance: there were, however, but few cases until the 20th. It then became more general, and continued to spread with great rapidity until the 1st of September. After this, the number of new cases began to diminish, and but few appeared after the 15th of the same month. This disease commenced in the ordinary manner of a catarrh. A soreness in the flesh, an aching of the bones, and a distressing lassitude, many complained of, a day or two before the disease assumed its most serious form. In some it was ushered in by a chill, followed by a fever, pain in

the head, eyes, and back. In a few instances, a pain in the stomach and bowels, followed by a vomiting or diarrhœa, were the first indications of the disease. Others, first complained of a hoarseness, soreness of the throat, and a cough; but a symptom, perhaps more general and characteristic of the epidemic than any other, was a peculiar soreness and rawness in the fore part of the thorax, immediately behind the sternum, which was rendered exceedingly painful and distressing by the cough. Many were attacked with an instantaneous and excessive flow of tears, attended with inflammation and an intolerance of light. The pain in the head and soreness of the flesh were also very constant symptoms, and were often prolonged for many days, unless removed by proper treatment. This pain in the head was rendered excessively severe by the cough, which was one of the most troublesome attendants of the disease. The tongue was generally moist and of a whitish colour. The nose was affected, as is common in catarrhs. The countenance, together with the whole surface of the body, often assumed a very florid appearance. It was attended generally with a frequent and soft pulse, sometimes full and but rarely hard. A sweating often commenced with the disease, and continued profusely for several days, but without any abatement of the symptoms. Persons of all classes and ages were subject to it; but children were far more exempt from it, and had it much more mildly than adults. Persons of delicate constitutions and subject to pulmonary complaints, were more severely handled than others. It proved fatal but in one instance where the influenza was the primary disease; and this was a woman near eighty-four years of age. She had no medical assistance until the day preceding her death. Pregnant women, who were otherwise healthy, did not suffer more from it than others. In one instance, a woman of a delicate constitution, by imprudent exposure to the wet and night air, brought

on a miscarriage in the sixth month, and died the second day. Immediately after her delivery, she was attacked with a laborious and difficult respiration, a cough, and other symptoms highly characteristic of the peripneumonia notha, to which she fell a victim in less than thirty-six hours. Another woman, in the ninth month of her pregnancy, who had the hydrothorax to a great degree, attended with a general anasarca, had all of her symptoms aggravated by the influenza, and died on the fifth day after her delivery. I do not think that women were more subject to it than men. Of those persons attended by me, the number of each was nearly equal; nor could I perceive that females were more severely afflicted by it than males.

The disease, when left to itself, continued no definite length of time. In those who were young, and in other respects healthy, it began to subside in about two or three days, but, in such as were aged or infirm, it was sometimes prolonged to the fifth, sixth, or perhaps seventh day. Patients were uniformly left in a remarkably weak state by the disease, and did not recover their strength so rapidly as convalescents usually do from ordinary diseases.

As the influenza frequently commenced with a sweating, it seemed to point out that evacuation as one designed by nature to carry it off. Diaphoretics were accordingly resorted to, and administered with freedom, but did not answer the end expected from them. They seldom removed the fever, pain in the head, limbs, or any other symptom, until after the disease had continued for several days; and even when it appeared to carry off the complaint, the debility that followed was evidently greater than that which succeeded other prompt and copious evacuations. This debility, however, was doubtless, in part, owing to the longer duration of the disease, as well as to the

inefficacy of the remedy. Among other medicines, the bone-set, or common thoroughwort, was plentifully and assiduously used by many, but without any material advantage when administered merely as a diaphoretic, and, if ever it was beneficial, it was from its emetic or purgative operation.

Blood-letting was practised, whenever indicated by the pulse; but as the pulse was mostly frequent and soft, this evacuation was not so often advised as the other symptoms would seem to indicate; still, however, when the pulmonic affection was urgent, or the pain in the head and limbs uncommonly violent, this evacuation was resorted to, but, I must confess, with much less relief than is generally derived from this operation in affections attended with such strong and urgent symptoms. Where blood-letting was not pointed out by the hardness and fulness of the pulse, the benefit was scarcely perceptible, and, in some instances, I think, injurious, for it occasioned an unnecessary prostration of strength, and finally retarded the recovery of the patient. Blood-letting was, at length, only advised when evidently indicated by the pulse, which was not more frequently than one in ten, of those who were so seriously ill as to apply for medical assistance. And the cases that required a repetition of the operation were extremely rare.

Purgatives were among the remedies first resorted to for the removal of this disease, and sometimes with great and singular advantage, for, in some instances, they were especially indicated by severe and distressing pains in the bowels. But it was principally in cases of this kind, and those attended with an undue degree of costiveness, that the good effects of purgatives were manifested. They were often and repeatedly tried where these symptoms were wanting, but the success resulting from their administration was partial and uncertain. This

want of success was not a little unexpected to me, for, after having witnessed the inefficacy of sweating and blood-letting in speedily removing the disease, my attention was more especially turned to purgatives. In them I placed great and unsuspected reliance; the symptoms of the epidemic also were such as to induce a belief, that, from the operation of this class of medicines, a speedy solution of the disease might be expected. In this, however, I was greatly disappointed. The symptoms, although frequently mitigated, were seldom removed, but continued with serious violence throughout the ordinary course of the disease. Calomel, jalap, and rhubarb were used principally; but others more mild, and of a less drastic nature, were not neglected; all fell far short of that success anxiously expected from them. Even the *bone-set*, so highly celebrated by many distinguished medical characters, when having no other than a purgative operation, as it will readily have when carefully administered, was an insufficient and ineffectual remedy.

The class of medicines next resorted to were emetics, which, of all others, were attended with the most certain and complete success. As this disease was attended with a great degree of debility, it was observed, that any violent operation of medicine of any kind was followed by less beneficial effects than when it operated more mildly: gentle emetics were therefore always advised, and were always useful. The medicine used for this purpose, and which was found to be more convenient and effectual than any other, was the antimonial wine, prepared after the formula in the American Dispensatory. The first case in which the salutary effects of this practice was fully and clearly exhibited was in a lady, who naturally was possessed of a very delicate constitution, and whose health had been recently much impaired by sea-sickness, followed by fever.

The influenza attacked her with all its virulence. An excruciating pain in her head, eyes, back, and limbs, high fever, attended with a frequent, soft, and small pulse, cough, soreness of the throat and chest, an intolerance of light and noise, were the symptoms more especially urgent. Antimonial wine, to be administered in small and repeated doses until it should operate as an emetic, was prescribed. Six hours afterwards she was visited. She had been puked gently, and had discharged a large quantity of bile, which was extremely acrid and nauseous. The pain in the head was much abated; that in the limbs, together with the fever, had almost entirely subsided. Neither the fever, cough, nor the pain returned, and in a day or two she enjoyed her usual health. The same evening the antimonial wine was prescribed for another lady, of a strong and healthy constitution, who had been attacked with equal, if not increased severity in every respect. The pain in her limbs was so excessive, that she compared it to a tooth-ach extending to every part of the body. The operation of the medicine was attended with the same complete and instantaneous success. The following morning, not a symptom of the disease remained, debility alone excepted. In the same family, another woman was handled equally severe, but whose constitution was so much impaired, that I really feared to venture upon full vomiting. She was therefore purged for two days successively, with but little, if any, abatement of the symptoms. The antimonial wine was at length resorted to, and was followed with the same success. Were it necessary, I could mention perhaps nearly a hundred cases that came under my immediate notice, and which, with very few exceptions, terminated in the same happy manner. In every instance the symptoms were much relieved; in a few, however, a slight degree of pain and fever continued, but subsided in a day or two at most. It is necessary to remark, that, in many

instances, the wine had a purgative as well as an emetic operation; and, in some inveterate cases, it was administered with the intention of operating both ways. So certain and so speedy was the cure effected by the antimonial wine, that many of the inhabitants of this place, but more especially the students of the college, who had seen its operation on their companions, procured it for themselves, and administered it without any medical advice, and with the same result. Nor was it here alone that this method of treatment was so successful. A neighbouring physician informed me that he had found gentle antimonial emetics far more efficacious than any other medicine he had used; and that, after various fruitless trials with other remedies, he at length had succeeded beyond his most sanguine expectations with this. I have also been informed of several other medical gentlemen who adopted the same practice, and seldom found any thing else necessary, except anodynes, which they all used in the after-treatment. It happened, that, in almost every case in which full vomiting was excited, large quantities of bile, uncommonly nauseous, was discharged; and if in any instance this practice was not attended with that complete success mentioned above, it was where this offensive matter was not at all, or but partially discharged. In every case, the pores were so effectually opened by the operation of the wine, that a gentle and comfortable sweating was produced, which carried off the remnants of the disease in a day or two, at most. The perspiration thus excited was of such a salutary nature, that it was necessary gently to encourage it; for if it was checked too early or suddenly, it caused a slight return of the pain and soreness in the flesh, but which was always immediately removed by the renewal of the perspiration.

That it was the emetic operation, and not the sweating or purging, that produced this speedy solution of the disease, I infer from the two following facts:—1st, when the wine was given so as to operate on the skin only, although assisted by a plentiful use of diluents, the duration of the disease was not materially shorter than when left to nature alone;—2d, when given so as to have no other than a purgative operation, although it sometimes abated, yet it never caused so quick and effectual a removal of all the symptoms.

The cough, notwithstanding it was much benefited in general, was less effectually relieved, than any other symptom. It often continued with unremitting violence for some days, nay, even weeks. Anodynes, however, were commonly a speedy and certain cure for this troublesome attendant on the disease. They were administered in a variety of forms; but the tinctura opii camphorata of the Edinburgh Dispensatory was thought preferable, and more convenient than any of the others. It was given freely, both day and night, when the urgency of the symptoms demanded it. By it, some obstinate and extremely distressing coughs were cured in a few days.

Demulcents were used, with great advantage, in promoting that mild perspiration which was so necessary, after the first and most violent stage of the disease was removed. Many of them were advised, but barley-water most frequently; it was generally agreeable to the patient, and answered every purpose expected from them.

Blisters were only applied where the affection of the breast was so great as to demand them, and were, as is usual in affections of that part, of great benefit.

A spare and liquid diet was necessary during the severity of the disease; but after proper evacuations, and the general abatement of the symptoms, food more nourishing, and a moderate use of good wine, were attended with evident advantage. They were useful in removing that state of debility in which patients were so often left by the disease, and without which treatment they did not recover with the usual rapidity of convalescents.

As the influenza generally terminated by sweating, it was necessary to increase the quantity of clothing; the neglect of which precaution often caused a sudden check to the perspiration, and produced many relapses. Almost every relapse was attended with a remarkable hoarseness and distressing cough; but these, for the most part, were readily removed by anodynes, and a restoration of moisture to the skin.

Whether the influenza is contagious or not, seems difficult to determine. The reasons for and against it are so numerous and plausible, that it requires more information than we are yet possessed of to decide with accuracy. That it was *apparently* communicated from one person to another, in many instances, does not admit of controversy. It sometimes appeared, that one infected person going into a family would communicate the disease to the whole or the greater part of it. This was remarkably exemplified in a family of one of my nearest neighbours. A gentleman had been on a journey, and returned home with the disease upon him. In about six or seven days afterwards, almost every one of a large family were seized with it. I have been informed, that its introduction into a neighbouring town could be traced, with apparent certainty, to a person who went there affected with it. There are also some instances of persons whose health had been

much impaired by long-continued pulmonary complaints, who have apprehended serious consequences from an attack of this disease, that have altogether avoided it by withdrawing from society, and having no communication with any, except such as were in all probability free from the infection. But, on the other hand, it is no less certain, that, in a great variety of cases, the disease *was not* communicated from one to another, even under those circumstances which are supposed to be most favourable for the propagation of contagion. It often happened that several in a family did not take it, while one or more had it severely. Some entire families, who had constant intercourse with their neighbours, escaped it altogether. In some neighbourhoods, many were attacked at the same time, without being able to trace it to any satisfactory source, and without having had sufficient communication with one another to account for the rapid spread of the disease. It also sometimes affected those who were evidently cut off from all communication with infected persons. If this disease is contagious, it acts differently from all other contagious diseases with which we are acquainted. It does not proceed with that regularity, either as to time or place, observed in the small-pox, measles, or any other known contagious disorder. The time necessary for the production of the disease, after the infection is applied to the body, is by no means ascertained; but at present appears to be extremely irregular; the infection being sometimes excited in a day or two, but at others not until after a lapse of a week or ten days. The influenza is not confined to particular districts, or tracts of country, the boundaries of which can be accurately described, as is often the case with other contagious maladies; but it pervades with great and surprising rapidity whole states, countries, and continents. These last considerations incline me to believe that it is in some way or other connected with, or dependent upon,

a particular constitution of the atmosphere. Unless this be the case, I cannot conceive how we can rationally account for the wonderful progress this disease has lately made throughout our extensive country. I am the more inclined to adopt this opinion, when I consider that those who lived in low and damp situations, exposed to fogs and exhalations from marshes or swamps, did not suffer more from it than those who resided on high and dry eminences: nor could I perceive that it assumed a more serious type where a great number were collected together. In the college of New Jersey, where the students all reside in the same building, the disease appeared in the same characteristic form, with symptoms neither more nor less severe than in the adjacent country.

Princeton, N. J. Dec. 1807.

Account of the Influenza, as it appeared in a part of Rockingham County (V.). By Dr. PEACHEY HARRISON.

Harrisonburg, Rockingham, Virginia,
December 31st, 1807.

SIR,

IF the following account of the influenza, as it appeared in this village, and the adjoining parts of the county, be conformable to the purposes which appear to have been contemplated in the invitation you have given to medical practitioners in the fifteenth number of your Museum, you are at liberty to make what use of it you think proper.

I am, Sir, with sentiments of great respect,

Your most obedient servant,

PEACHEY HARRISON.

Dr. John Redman Coxe.

ROCKINGHAM, of which Harrisonburg is the county-town, and distant from Philadelphia about 260 miles, is bounded on the north-west by the North Mountain, from which the Shanandoah River derives several important branches; and on the south-east by the Blue Ridge, which are distant from each other between twenty and thirty miles. The soil, throughout a great proportion of the county, is calcareous, and is well adapted to the cultivation of wheat, rye, maize, red clover, and, in the low grounds formed by the small creeks, where argil predominates, timothy and blue grass constitute excellent meadows. This district of country abounds with perennial springs; but the water they yield holds so much lime in solution, or, to use the common phrase, is so hard, as to require *breaking*, before it is fit to be used in washing clothes; for, when this precaution is not taken, the soap is decomposed, and its cleansing power entirely destroyed. Fruit of every kind is an uncertain crop, except along the mountains, and there, apples in many orchards are rendered unfit for use, by what is called the *bitter rot*, a disease of which the cause, so far as I have been able to learn, has not been well ascertained. Whether the default in the fruit arises from some cause inherent in the tree, or some external source unconnected with the condition of the tree, is matter, it seems to me, of great doubt. The evil, however, is a serious one; and one that renders the rearing of an apple orchard, in this country, at this time, a labour of very uncertain advantage. This disease of apple orchards was unknown till of late years. Orchards are said to have been much less injured by it this season than they were several seasons past.

South winds are generally the precursors of our rains; north-eastwardly winds bring our deep snows; and those from the

north-west accompany dry, and are perhaps the cause of our coldest weather: these prevail through a large proportion of the year. All our hurricanes come from this direction: they were more frequent and destructive last spring than they were ever known before in this country. Bilious fevers are not natives of our soil. We had our share of them, however, in the extraordinary autumn of 1804. In common seasons, pure remittents and intermittents are scarcely known, at least as generated by causes existing in our own country: they have been caught in other places. We are occasionally visited by fevers, but they mostly prevail in cold weather, and are of typhous character. In the winter of 1805–6, cases of this fever were frequent, and, in every instance of which I had any knowledge, they appeared to me to be the offspring of domestic filthiness. They occurred, in every instance, in circumstances favourable to the accumulation and putrefaction of human excretions, viz. in crowded and unventilated cabins, and in families not remarkable for their cleanliness. Its attacks were slow and insidious, never being completely formed under eight or ten days. During this time the patients were not confined to their beds. It generally proved fatal by a determination to the brain. I believe I am authorized by experience to say, that early and proper depletion would generally have given safety to the patient, by preventing the formation of internal congestions; after these were formed, the pulse became lank, tremulous, and very frequent, and, in this situation, depletion and stimulation were equally useless.

The winter of 1806–7 was among the severest ever experienced in this latitude. In the months of March and April, a catarrh, accompanied with more or less of pneumonic symptoms, prevailed pretty generally through the town and its vicinity. It resembled, in almost every important particular, the late

influenza. The most remarkable differences were, more acute pains of the thorax, a more obstinate cough, and requiring a more free use of the lancet. March, and the greatest part of April were unusually cool and wet, and vegetation was remarkably backward. About the last of April the weather grew soft and pleasant, and the vegetable kingdom experienced an almost instantaneous resurrection. From the 2d, however, of May until the 13th, the progress of vegetation was greatly retarded, both by cold and drought. The wind continually stood either north-west, north, or north-east, and nearly every night there was frost, and even ice. After this date, the air became temperate and rain abundant. Vegetation again revived, and pastures soon became luxuriant. From this time, until the last of September, we had frequent, and often heavy showers of rain, accompanied with unusual electric phenomena.

It was remarkably healthy, both in town and country, from the last of April until the appearance of the influenza, which was about the 8th of September. My colleague, Dr. Cravens, and Mr. Benjamin Smith, were the first subjects of it, within the circle of my acquaintance and observation. They had returned, on the evening of the 5th, from Tyger's Valley, distant from this, in a north-west direction, about a hundred miles. On the evening of the 8th, Dr. Cravens was seized with chilliness, soreness in his muscles, pains in his head and bones; coryza, fever, and cough soon succeeded. The pain of the head was seated over the right eye, and was the most distressing of all his symptoms. On the morning of the 9th, Mr. Benjamin Smith, who lives two miles out of town, saw him; in the evening of the same day, he was seized with symptoms of influenza. They saw on their journey no complaint similar to, or what they had a right to believe was the influenza. They saw no one labouring under it after their return. From

this time until the 11th, I knew of no other cases in either town or country, and have good reason to believe there were none; for at this time we had begun to expect its appearance, having heard that it had successively attacked Winchester, Woodstock, and New-Market, the last of which places is distant eighteen miles from this; and being in the constant practice of taking notes of diseases, especially of epidemics, and never having enjoyed the opportunity of seeing *this*, since I commenced the practice of physic, I was anxious to preserve as copious notes of it as possible. I find, however, no notice of any other cases in my register than those I have mentioned, until the 11th, early in the morning of which day I was taken with soreness in my muscles, pains in my bones, and chilliness, together with an universal listlessness. In one hour after I felt the first symptom, I was extremely unwell, and, in the course of four hours, my complaint had attained its acmé. On the 12th I was able to be up, and a young man, Ottaway Cutler, sent a request for me to visit him. He lived in a distant part of the town; had been suddenly seized, about bed-time the evening before, with pains in his limbs, chilliness, and soon followed by head-ach and high fever. Pediluvium, and warm teas had brought on a sweating, but his skin was still hot, and his head violently pained; had at this time no coryza, and but little, if any, cough. A purge abated all his symptoms, and he soon recovered.

Cases now began to multiply so rapidly on every hand, that it would be impossible, and perhaps useless to attempt a further detail. A large majority of cases was so slight as not to confine the subjects of them a single hour, nor even to render them unfit for pursuing their ordinary employments. Except when they were accompanied with considerable pulmonic symptoms, the most violent cases did not confine the subjects

of them more than three or four days. Children had it more slight than adults. It was at least a week after Mr. Smith's attack that his family became the subjects of this epidemic, and not until ten days after mine that the rest of my family were taken with it. Its continuance in town was about five weeks; after the fourth it became evanescent. Very soon after its appearance in town, it fell on the adjoining neighbourhoods, and, by the 12th of October, it was only heard of in the remotest parts of the county, and had entirely disappeared by the 23d of this month. The comet was not observed in this place until about the 26th of September, and was no more to be seen after the 12th of November. There was a deficiency of rain during the months of October and November. The wind generally stood north-west.

The most prominent symptoms of this epidemic were soreness of the muscles, pains of the bones and head; the pain of the head was generally seated over one of the eyes, and the eye-balls themselves were often sore and pained; cough more or less violent and obstinate; soreness, and sometimes obscure, or even acute pains of the thorax, with more or less straitness of breathing; sneezing, a discharge of mucus from the nose, an effusion of tears, did not always, but pretty generally attended. In a large majority of cases, the pulse was remarkably soft and destitute of force; and, even in those cases attended with pneumonic symptoms of considerable strength, the pulse was so soft and weak, that, judging from that alone, I should have determined against blood-letting. The cough was the most harassing and obstinate symptom that belonged to this disease. A loss of taste and terrific dreams were very common, and, in a few instances, there was a drowsiness approaching to coma. Sweating was by no means a pathogno-

monic symptom; it did, however, frequently attend the solution of the fever, and the more violent cases of cough.

The treatment was simple. Fever, accompanied with pneumonic symptoms of any considerable force, although the pulse was not hard and full, called for the use of the lancet. Only four or five cases of this kind fell under my care. In these it was found necessary, in order to subdue the pulmonic symptoms, to let blood two or three times; and this operation was attended with its usual success in such cases. When the fever was accompanied with head-ach, and but slight pneumonic symptoms, a purge or emetic, according to circumstances, was found sufficient to alleviate these symptoms. When the fever and other symptoms were slight, the patients were advised merely to confine themselves to the house for a day or two, and to use warm drinks. An infusion of the seneca or Virginian snake root was found, in these cases, to be very useful. The few that followed this advice recovered most speedily. Opiates had a benign influence in this complaint, and more especially when the shortness of breathing and pain of the breast were slight. I preferred the compound camphorated spirit to simple laudanum, and, when the object was to appease the cough, the former, combined with the succus glycerrhyzæ, constituted a delightful and efficacious remedy.

I knew of several relapses, one of which had nearly proved fatal, by inducing peripneumony. This relapse was occasioned by night exposure. Relapses were generally more tedious and severe than original attacks.

I know of but one case in which the influenza has been followed by phthisis pulmonalis, or in which it will be the probable termination.

The contents of privies appears to be the most abundant source of offensive air, and the sole cause of bad pump water in our city. In order to remove this evil, we must construct common sewers in the middle of the streets and alleys; a small sewer will establish a communication between the privy and common sewer; two privies may be erected at the end of one small sewer. A trunk, under the bench of the privy, two feet wide, and three deep, will be sufficient; six inches of water should be admitted from the hydrant every morning, and be discharged between nine and eleven o'clock, every night, by drawing a flood-gate constructed for that purpose: with the addition of a cover to the openings in the benches of privies, we should be no longer annoyed from this quarter*. Through the same medium the offal of the kitchen may be discharged, which will take away a very considerable mass of perishable matters.

* A much readier plan to improve the pump water of the city, would be to allow a greater depth for the privies than is at present permitted by law. They are so much higher than the wells of the pumps in every part of the city, that their contents, continually percolating through the earth in all directions, necessarily reach the adjoining wells, and mix their impurities with the water. It is certain that the pump water becomes, in this city, progressively bad, according to the increase of population: the water about the commons is good, and even on and near the vacant squares of the city, as the state-house, &c. If then (as I think it) the small depth of the privies is the chief source of this evil, it only requires to sink them a little lower than the neighbouring wells, by which means the water of the wells will percolate into the privies, and of course the reverse cannot take place. It is not necessary to recal to the recollection of our citizens a certain sulphureous spring, from a pump near Sixth and Chesnut streets, some years back, and which was resorted to, by all classes, as to the Temple of Hygeia; but, alas! some defects in the adjoining Temple of Cloacina being soon afterwards repaired, the medicinal virtues of the fountain soon subsided.—EDITOR.

The common sewers can be constructed on a very economical plan, by sinking a trench in the middle of the streets, five feet wide and six feet deep. Pave the bottom of it well, and raise a brick wall, one foot thick and three feet high, on each side; cover the whole with flag stones cut straight at the sides, and applied close together; afterwards plaster with lime and sand, and pound the earth well down.

By carefully removing the contents of the present privies, after adopting the above regulations, we shall restore the pump water to its pristine purity; and this must be very desirable, when we consider the increasing population of the west end of the city, with the addition of the new Bridewell, the filth of all which will find its way into the Schuylkill, only one square from the bason that supplies the city with water, and may soon find its way into our tea-kettles.

The docks of Philadelphia may be considered as so many immense laboratories of noxious gases. All that is necessary to remove the evil, will be to wharf so far into the river, that no part of the bottom of the dock will be left bare at low water. Wharves add to the unhealthiness of the air, by being constructed of, and partially filled up with perishable vegetable matters. They ought to be constructed of stone; but, as this will hardly be accomplished, no perishable matter should be suffered to enter into the composition of made ground on the margin of the river. Ships often annoy a whole neighbourhood by discharging putrid bilge water; they ought to be cleansed in the middle of the river, and never nearer the city, on any condition whatever.

Places of interment have long been considered dangerous to health in large cities; but they have been as carefully re-

in the evening; but in hot and damp weather, these gases seldom rise high, and then are very dangerous to health.

It is these noxious effluvia, joined with heat, and heavy, foggy weather, that, acting as a remote cause, predisposes the body to sickness, and only requires some indiscretion, which, by acting as an exciting cause, brings on disease.

To the above causes of predisposition to disease may be added, the bad condition of pump water in large cities. The constant use of water containing so large an admixture of foreign matter, must be pernicious and debilitating. Strangers find their stomachs and bowels very much disordered soon after drinking freely of it.

The expence incident to the execution of any plan of cleanliness like the above, may deter many people from countenancing it; but when we recollect the great number of valuable citizens that have fallen premature victims to the ravages of malignant fevers; when we recollect the expence, inconvenience, and confusion consequent on sudden flight from our homes; and when we consider the total loss of all business for the season in which that fever appears among us, I am induced to hope the attention of our citizens will be directed to their true interests, which will be some plan to correct the state of the atmosphere of our city, and thereby prevent those evils in future.

Case of Syphilis, succeeded by Symptoms of Gonorrhœa. Read before the Philadelphia Medical Lyceum. By JOHN REDMAN COXE, M. D.

FEBRUARY 4th, 1805, captain S. desired my attendance for a sore throat of a month's standing, and an ulcer on the left side of the forehead, below the hair. He had likewise a smaller one between the right hip and the lumbar region. On examining the throat, I found both tonsils considerably ulcerated, accompanied with tumefaction, redness, and pain of the palate. From their appearance, I could not doubt their syphilitic origin, in which I was confirmed by the account he gave me.

In the beginning of the preceding August, at Lisbon, he received an infection from an actress, which in a few days showed itself in form of chancre. Under the care of a physician, ptyalism was *very rapidly* induced, and the disease disappeared in time for his voyage to America. From eating too largely of fruit before he sailed, he was attacked in a few days with a violent diarrhœa, which continued three weeks, and reduced him greatly. The voyage lasted sixty-four days, and he landed about the latter end of November, without any recurrence of the syphilitic symptoms. He continued well till towards the middle of January, when he began to notice the appearance of copper-coloured blotches on his hands, arms, breast, &c. and soon after, a pimple appeared on the forehead, which rapidly increased to a sore of nearly the dimensions of a quarter of a dollar, the size at the time of my seeing it. His throat also began to pain him, but not sufficiently to excite alarm at first; so that, by the 4th of February, the ulcers there had greatly augmented, and the sore on the hip had also come on. He had no other symptoms

upon him, and had used only the common domestic gargles and dressings for his throat and ulcers.

As his bowels were bound, I ordered a dose of salts, and light broths for food, as he could not swallow solids. I then commenced a course of mercurial frictions night and morning, urging it slowly, to prevent the too rapid affection of the gums. Laudanum also was administered at bed-time, and precipitate applied to the external sores. In about a week, the sores began to assume a healthy aspect, and in three weeks were quite well. I still continued the mercury till the gums were slightly affected, and mercurial ulceration began to appear, which soon yielded to common astringent gargles. A more generous diet and port wine were ordered, as soon as he could use them, and by the beginning of March, the blotches, sores, &c. had entirely disappeared. At the time of the healing of the sores, he informed me, a running had commenced, unattended with scalding, and for which I ordered a weak saturnine injection. I was now very particular in my enquiries of him as to the origin of this last complaint; but he always assured me he had never exposed himself to the chance of infection, since that which produced the syphilitic complaint at Lisbon, in the preceding August, as, indeed, his voyage and subsequent indisposition rendered apparent. He had had a gonorrhœa eighteen months previously, but never since, and this he uniformly persisted in confirming, at every subsequent enquiry. As the running still continued, without any pain, I supposed it might probably be a gleet, and ordered balsam copavi, in considerable doses, and an injection of port wine and water, during the greatest part of March, without any cessation of the disease. About the middle of March, he began to perceive a slight scalding, and was sensible of pain on pressure, about an inch from the extremity of the urethra. I again re-

sumed the saturnine injection, and continued it a week, when great tumefaction of the prepuce occurred, with considerable disposition to phymosis. The discharge apparently was less bland. I discontinued the injection, and applied a cold saturnine poultice to the swelling, which, however, increased greatly, and the scalding became much more severe; chordee also had for some time existed, which required laudanum to check it. The swelling subsided by the commencement of April, but the discharge continued with augmented pain upon passing his urine, which, however, came away in a full stream. On the 4th, on passing a bougie, considerable pain was felt from about one to three inches up the urethra, but I saw no reason to suspect a stricture. I now, therefore, ordered an injection of a grain and a half of corrosive sublimate to eight ounces of water, to be used four or five times daily. The swelling of the prepuce had nearly subsided by the 9th, but the ardor urinæ was aggravated. As he was feverish at night, I ordered him to lose ten ounces of blood, and to take gentle laxatives. The injection was weakened to one grain to eight ounces; and a hundred and twenty drops of laudanum were added to it. He was not relieved by the bleeding; but the internal use of laudanum appeared to be most beneficial to him. The injection with corrosive sublimate was laid aside, and one employed in its place, made of the sulphate of soda poultice, as recommended by Dr. Ferguson, of Aberdeen*. This, after a week's trial, gave him but little relief. The veins of the lower extremities became very painful, and swelled considerably. Great itching of the limbs after walking. The discharge from the urethra became more watery, and the pain felt in passing urine still continued, about three inches from the extremity of the penis. Chordee continued. An injection of cold water

* See Medical and Physical Journal. Medical Museum, vol. i. p. 462.

relieved him considerably. He now complained of a small sore at the junction of the glans and frænum, for which he used a wash of corrosive sublimate. I also gave him ʒss. of nitric acid daily, partly for the complaint, as likewise to invigorate the system. The discharge continued considerable, but the scalding abated. On the 28th he was bled, with much relief, to the painful, turgid veins of the feet. The small sore on the penis appearing fistulous, I found by the probe that it ran down above half an inch by the side of the urethra. The prepuce was much enlarged at this part, especially during the after part of the day. The injection by the urethra was found to regurgitate by the fistulous canal. His strength being increased by the use of the acid, I put him again on the use of the mercurial pill, and ordered a bougie to be worn for half an hour, morning and evening, using also an injection of calomel and gum arabic. Finding a complete sinus, however, to have formed between the sore and the urethra, he used a flexible catheter to prevent the urine passing by it, but without benefit*. The pain of the legs, &c. was moderated by bitter fomentations. His general health appeared better, and I was in hopes that every untoward appearance was giving way; when he was severely bruised by the fall of a spar on board ship, which laid him up for a week or ten days, with great pain of the loins. This was at length relieved by a blister. About the first week in June, whilst still using mercury, a node appeared on the right side of the frontal bone. It was, however, relieved by stimulating frictions. His general health was so much better than it had been, that he hoped to derive much benefit from a

* Since writing the above case, I have met with another instance of a small sore forming at the frænum penis, in a case of gonorrhœa, and opening into the urethra by a sinus, about an inch from the mouth. This, however, readily healed by enlarging the external orifice, so as to give a free discharge to the matter.

West India voyage, which he accordingly undertook, as master of a vessel. He experienced much severe weather, and the syphilitic symptoms again recurred with much violence; and the last intelligence that I received of him was, that he had fallen a victim to the diseases of the climate, induced by the great vicissitudes he experienced from continued gales, &c. which rendered it necessary that he should expose himself more than his system was enabled to sustain, under the complicated effects of disease and the remedies employed.

In this case, one of two things must have occurred. Either he must have received the infection of gonorrhœa at the same time with the chancre, which did not show itself till this last disease was suspended, after arriving in America, and consequently must have lain dormant from August till March (upwards of six months); or, if the two diseases arise from one stock, it must thus have shown itself upon the cessation of the syphilitic symptoms. From its *immediate* appearance, on the cessation of these last, I am of opinion this must have been the case; as it seems scarcely probable, under every circumstance, that the gonorrhœal virus should have remained dormant so long. Why it did not break out on the cessation of chancre at Lisbon, I cannot account; but I consider it as an additional reason in favour of the joint origin of the two diseases; for, had the two diseases a different source, it is more likely that it would then have shown itself, than that it should have continued dormant for so much greater a period*.

February 3d, 1808.

* J. Hunter gives a remarkable fact of a young woman received into the Magdalen Hospital in London, and continuing there for two years. The moment she came out, she was picked up by one waiting for her with a post-

Observations on the Modus Operandi of Cold. By Joseph Klapp, M. D.

Southwark, February 23d, 1808.

Dear Sir,

If you should think that the following appendix to the reasoning part of my Inquiry into the Modus Operandi of Cold, lately delivered before the Philadelphia Medical Society, as an annual oration, would contribute to the elucidation and establishment of our ideas on that subject, you have my consent to include it in the next number of your Medical Museum.

Though the operation of cold is unquestionably a subject of magnitude both to the physiologist and the practitioner of medicine, and notwithstanding it has of late become extremely fashionable in our university to dispute whether it be that of a stimulant or a sedative, yet I can with sincerity affirm that no design has been entertained of provoking a fresh controversy. The subjoined experiments are thrown out only with a hope of advancing medical characters a step nearer to truth, their common desideratum.

chaise, to carry her off immediately. She gave him a gonorrhœa.—P. 38, second London edition.—He supposes it to be the effect of habit, by which the parts in her had lost their susceptibility of that irritation, although she communicated the disease to another.

The same author gives us cases of gonorrhœa producing lues venerea.—See p. 16.

Perhaps sophistry may make an attempt to discard them, but correct inquiry must confirm them.

I am, Sir,

Yours, most affectionately,

JOSEPH KLAPP.

Dr. John Redman Coxe.

"Some modern writers on medicine have called cold a stimulus to animal fibres, which it always renders torpid or inactive; a theory derived from Galen, and which must have originated in his total ignorance of chemistry and natural philosophy."

DARWIN.

WHEN the philosophic enquiries of the chemist into the nature of cold was contrasted with the speculations of the physician concerning its modus operandi, it was remarked, that the former had long since approximated truth by the guide of experiment, while the latter was still involved in controversy and doubt, in consequence of its having been, in the most of instances, left to the disposal of hypothesis and the most pliant facts. To this observation, however, the late Dr. Currie, of Liverpool, and Dr. Stock, of Bristol, must now be noticed as exceptions. They respectively instituted a series of experiments, the results of which favour opposite opinions. Dr. Currie was a warm advocate for the stimulating operation of cold; while Dr. Stock, with equal zeal, and, in my estimation, with more success, has endeavoured to establish a contrary theory. But their mode of experimenting does not appear to be altogether free from objection; at any rate it certainly cannot be considered the most decisive method of prosecuting this highly important enquiry. The persons who were the subjects of their experiments were nearly, or quite immersed, and, in some instances, plunged suddenly into cold

water, and the state of their pulse was afterwards taken, as an indication of the change of excitement which the cold produced in their systems.

It appears to me, that this method of experimenting unavoidably incurs such a degree of impression on the system from other causes, as to make it a matter of extreme difficulty to decide with certainty, on the true and separate effects which ought to be attributed to the cold. For example, the sudden change of medium from that of atmospheric air to water, must operate in some degree on the system with the force of a mechanical agent. And one would naturally suppose that those muscular exertions which were incurred in excessive shivering, and in swimming backwards and forwards, would infuse into the system, with cold, such blended effects, as to make it a question what ought to be imputed to collateral agents, and what was really produced by a mere change of temperature.

With the expectation of being able to avoid all or the most of these difficulties, I have instituted a few decisive experiments, which, with a few exceptions, were performed in a medium of air, instead of water. In this way, the living system was only liable to a variation of its excitement from a change of temperature, as unusual muscular exertions were prevented, by the subjects of the experiments walking composedly out of one room into another. It is true, that even in this most precautionary way, some tremor or shivering did occur, but not to such an extent, it is conceived, as would affect the result of the experiments.

EXPERIMENT I.

On due examination, my pulse was ascertained to afford seventy-four pulsations per minute, and as to quickness and fulness, it was as usual. My feet and legs were then immersed in a bucket of cold water, a few degrees above the freezing point. The gentleman who gave me assistance was very cautious, and particular in noticing every change which occurred in the pulse, and the following is an exact account of his report: Two minutes after the immersion, the pulse beat sixty-three strokes the minute; three minutes, sixty-two; four minutes, sixty-two; six minutes, sixty-four; and seven minutes from the commencement of the immersion, it afforded sixty-nine pulsations per minute. As the water was now acquiring warmth, the experiment was discontinued. The pulse was observed not only to become less frequent, but it lost much of its force and fulness.

As the design of the experiment related, appeared well calculated to produce decision in the present controversy, I was induced to repeat it after Dr. Rush, and its result with me confirms the doctor's statement.

EXPERIMENT II.

My feet and legs were immersed in a tub of recent snow, which had fallen during an exceeding cold night of the month of January. On placing the bulb of Fahrenheit's thermometer in the snow, the mercury immediately descended to the freezing point. In two minutes after the beginning of the immersion, the pulse became very weak, and fell in frequency from seventy-four pulsations to fifty-eight, in a minute.

This experiment was repeated the same evening on a healthy young man, with the same result. In both instances, after the immersion had been discontinued for the compass of a few minutes, the pulse resumed something more than its usual force and frequency.

To those inferences which these experiments obviously afford, it may be replied: " even admitting it as a fact that cold does always diminish arterial action, it does not follow from thence, that it is in its nature, necessarily, and essentially, a sedative, or a debilitating agent; because digitalis and saccharum saturni, when taken internally, reduce both the force and frequency of the pulse; so also does tartar emetic; yet neither of these articles can be considered as a sedative. They are all powerful stimulants to the stomach, and reduce arterial action only by sympathy." Instead of the conclusion, of the sedative operation of cold from the fact of its directly reducing the force and frequency of the pulse, " bespeaking a partial view of things," I am most decidedly of the opinion, that this method of reasoning is perfectly consonant with every established and rational rule of judging of the modus operandi of medicines. To assert that saccharum saturni, digitalis, and tartar emetic reduce arterial action in the same way as cold, exposes a singular disregard to all experiment and observation. Dr. Moore, who graduated in this university some years ago, has related, in his inaugural thesis, a number of experiments, which indisputably prove that the primary effect of digitalis on the system is an acceleration of the pulse; and, from my own observation on different persons, while under the primary impression of large doses of saccharum saturni and tartar emetic, I can with confidence declare, that they both, first elevate the pulse for a few strokes, before they diminish it in fre-

quency. My experiments on these two last articles will, perhaps, ere long, be handed to the public.

If cold be a stimulus, then its general application to the animal body, comprising not only the cutaneous but the pulmonary surface, must augment muscular strength and arterial action. With the view of investigating this point, the following experiments were instituted, with such a regard to fairness and impartiality, as to induce me to challenge such as may doubt, to repeat them.

EXPERIMENT III.

The gentleman who was the subject of the last experiment, when repeated, exposed himself nearly naked to an atmosphere, which sunk the mercury in the thermometer of Fahrenheit to the freezing point. On examining his pulse, one quarter of an hour after the commencement of the experiment, it had lost much of its force and fulness, and was diminished in frequency, from seventy-six to sixty pulsations in the minute.

In reply to the various proofs which have from many quarters been obtained, of the power of a high degree of cold to diminish the force and frequency of the pulse, it has been asserted that such evidence is not conclusive, since the fact "is only true with regard to very high degrees of cold, and that a moderate degree of it invigorates the blood-vessels, muscles, and every other part of the system." This opinion is openly exposed and refuted by the succeeding experiments.

EXPERIMENT IV.

After different examinations were made by a medical assistant, my pulse was found to beat in the radial artery sixty-eight times in a minute, and usual as to force and fulness. I now walked into another room with no clothes on except my shirt, and, after being exposed to its air, of the temperature of forty degrees of Fahrenheit, for twelve minutes, the pulse afforded fifty-eight feeble strokes in a minute; in fourteen minutes, it was at fifty-six; in fifteen, fifty-six; in sixteen, fifty-four; and in seventeen minutes from the beginning of the experiment, the pulse emitted fifty-six weak strokes in the minute.

Comparative with the degrees of cold which were used in the former experiments, that of the last one may be termed moderate; but, notwithstanding this variation of temperature, it does not appear that the effects produced on the pulse are in any respect different, except in degree.

The following, however, may be deemed more to the point, and therefore more satisfactory.

EXPERIMENT V.

J. E.'s pulse, after due examination, was found to beat seventy regular and usually full strokes per minute. He then walked into another room, with no clothes on, except a loose shirt; and on the sixteenth minute of his exposure to an atmosphere of the temperature of fifty degrees of Fahrenheit, his pulse beat sixty strokes; on the eighteenth, fifty-eight; and, on the nineteenth minute, it afforded fifty-nine pulsations.

From the commencement to the end of the experiment, the pulse was sensibly diminished in force and fulness.

Feeling some degree of curiosity to ascertain what effect an exclusive application of cool air, first to the pulmonary, and then to the cuticular surface, would have on the force and velocity of the pulse, I concluded on gratifying this particular inclination by performing the two following experiments:

EXPERIMENT VI.

On examination, A. B.'s pulse was found to beat seventy-six usually full and regular pulsations the minute. Cool air, of the temperature of forty-five degrees, was respired through a long tube put through the window, while the mercury in the thermometer was at seventy degrees in the room in which the subject of the experiment stood.

On the sixteenth minute from the beginning of this process, the pulse was at seventy; on the eighteenth, it beat seventy-two strokes; and, on the nineteenth minute, seventy-two.

The volume of the pulse was evidently softer and smaller than it had been.

EXPERIMENT VII.

J. E.'s pulse yielded sixty-eight strokes in a minute, and regular. He exposed himself nearly naked to air of the temperature of thirty-five degrees of Fahrenheit, and, at the same time, breathed air through the tube, out of a room in which the quicksilver in the thermometer stood at sixty-five degrees. On the fifth minute of the exposure of J. E. the pulse beat

only fifty-eight times; on the sixth minute, fifty-nine; and, on the seventh minute, it afforded sixty strokes, the size of which was diminished, and the force of the pulse was weaker than previous to the experiment.

Thus it appears, from the foregoing experiments, that not only high and moderate degrees of cold, applied generally to the body; but when applied to the cutaneous and pulmonary surfaces separately, diminish both the force and frequency of the pulse.

Those gentlemen who gave me assistance in this practical department of my enquiry, can bear testimony to the unexceptionable description, of not only the design, but the performance of the experiments. They will, therefore, I hope, carry to every candid mind all the weight and decision which have been attached to them by those persons who were present at their performance. In short, both reason and experiment pronounce cold a debilitating agent.

Experiments and Observations on Fulminating Mercury. *By* JAMES WOODHOUSE, M. D. *Professor of Chemistry in the University of Pennsylvania, &c.*

SUPPOSING that fulminating mercury might be applied to the purposes of war, and particularly in perforating the timbers of vessels, by being applied to their bottoms, by means of the torpedoes of Mr. Fulton, I undertook a series of experiments, to find out a simple method of preparing it in large quantities.

In this I succeeded; and the following mode of making this dreadful compound never fails, and yields a larger product than any other process, at present known:

Take two ounce measures of a saturated solution of mercury in the nitric acid, and pour it into a quart tumbler. Add to it four ounce measures of alkohol, and then two ounce measures of the best and strongest nitric acid.

Immediately an effervescence will take place, and an immense quantity of nitrous etherized gas and nitrous air will be discharged in thick white clouds, and, in about fifteen minutes, the fulminating mercury will be deposited at the bottom of the vessel, in slender crystals of a white and brilliant colour.

They must be washed by filling the tumbler twice with pure water, and then dried by a gentle heat, or by exposing them two or three days to the air. The proportion of ingredients here mentioned will yield two hundred and twenty-seven grains of this exploding preparation.

A brick-bat, weighing five pounds, was placed upon fifteen grains of this fulminating mercury, lying upon an inch plank. A train of gun-powder was made to communicate with the fulminating compound. Upon firing it, a piece of the plank, several inches in length, was torn off.

Thirty grains, fired in the same manner, split the brick in two, perforated the plank, and tore away a piece of it, five inches in length, and two in breadth.

Sixty grains, placed on a three inch plank, with two brick-bats over them, broke the bricks into a variety of pieces, scat-

tered them in every direction, and made an excavation in the plank, half an inch deep, and five in circumference.

Ninety grains, under five bricks, broke the whole into an immense number of pieces, perforated the three inch plank one inch deep, and nine in circumference.

Two hundred grains were laid upon an oak plank five feet in length, and one foot in breadth. Another plank of the same size was laid over the fulminating mercury, and confined by thirty pounds weight of bricks. Upon firing the compound, all the bricks were broken into pieces; a foot in length and breadth of the table on which the planks rested was carried away; the upper plank was thrown into the air; both were split, and small excavations made in them.

An idea of the immense force of this substance may be conceived, when it is related, that ten grains of it will burst the strongest pistol-barrel that can be made.

As it possesses a thousand times the power of gunpowder, is no ways dangerous, and can be fired by the flint and steel, it would appear to be preferable to this article to charge the torpedoes of Mr. Fulton.

Experiments and Observations on the Cooling of Water by Evaporation. *By* JAMES WOODHOUSE, M. D. *Professor of Chemistry in the University of Pennsylvania, &c.*

IT is a fact well known to philosophers, that evaporation always generates cold, and that the temperature of bodies is reduced, according to the volatility of the fluids applied to them, and to the warmth and dryness of the atmosphere.

Thus, the sulphuric ether applied to the bulb of a thermometer, will reduce the mercury many degrees below the freezing point; but, when mixed with the muriatic ether, the volatility of the two fluids is increased, and the quicksilver will descend below zero of Fahrenheit's scale.

In India, Persia, and Egypt, they make their drinking cups of a soft, porous clay, which, by suffering some of the water to transude and evaporate, cools the rest.

Russel, in his History of Aleppo, informs us, that the Turks cool their wine, in the summer season, by wrapping a wet cloth round the bottle which contains it, and exposing it to the rays of the sun.

Dr. Pinkard tells us, that at Barbadoes they make the wine and porter very pleasantly cool, by putting the bottles in wet cloth bags, and placing them in the open windows for some time before dinner, taking care to sprinkle them occasionally with water as they stand exposed to the breeze*.

Although the thermometer never descends to the freezing point, and ice is never discovered, at Calcutta, in the East Indies, in the pools or cisterns, or in any of the waters collected in the roads, yet, by evaporation, the inhabitants make a sufficient quantity of it in the winter for the supply of the table during the summer season†.

Travellers all agree, that water may be rendered cool by evaporation; but none of them have informed us of the exact

* Notes on the West Indies, vol. 1. p. 243.

† Philosophical Transactions, vol. 65. p. 252.

degree of temperature to which it may be reduced, by means of a thermometer, the only accurate mode of ascertaining the fact.

Witman, in his Travels in Turkey, Asia Minor, and Syria, speaks of its being rendered extremely cool*.

In order to find how low water could be cooled in Philadelphia, one of the vessels which the natives of India use, was procured, and two others were made exactly like it, one of our common clay, and the other of clay and charcoal, both burnt and unglazed. These vessels were filled with water of the temperature of 52°, and were kept swinging in the sun and shade, for several hours at a time, when the temperature of the atmosphere varied from 86° to 110°. The temperature of the water in all the vessels was raised from 52° to 80° and 100°, and they appeared to have no other effect than in preventing it from becoming disagreeably warm.

As evaporation is always in proportion to the warmth and dryness of the air, it can easily be conceived, that water may be cooled in Egypt by these vessels, and particularly when the kampsin or sirocco wind blows; for this air is so very warm, that it appears as if issuing from the mouth of an oven.

* Page 384, Philadelphia edition.